4.2. SPECIAL PROJECTS

4.2.1. JOSIE-2000

JOSIE-2000 was held at the Research Center, Jülich, Germany, in September 2000, during two 9-day periods. The project, sponsored by the World Meteorological Organization (WMO), provided an excellent opportunity to compare ozone profile measurements from various ozonesonde groups, using slightly different ozonesonde preparation procedures, sensing solutions, or instruments.

During JOSIE-2000, ozonesondes were tested in seven separate simulated flight conditions in an environmental chamber, with an ultraviolet (UV)-photometer as an ozone reference. The chamber accommodated four ozonesondes during each simulation. Eight different groups participated; seven used ECC ozonesondes and one Japanese group used the KC79 ozonesonde. The testing procedure was similar to the JOSIE-1996 campaign [*Smit et al.*, 1998], where all participants brought their own ozonesondes and preparation equipment.

Among the JOSIE participants, three different cathode sensor solution recipes were used, three pump-efficiency algorithm curves were used for data processing, and ozonesondes were from EN-SCI Corporation and Science Pump Corporation. CMDL used both Science Pump and EN-SCI ozonesondes. The only major difference for CMDL during JOSIE-2000 compared with JOSIE-1996 was the switch from the standard buffered 1% KI sensor solution, used by all ECC ozonesonde groups in JOSIE-1996, to unbuffered 2% KI sensor solutions. CMDL's measured pump efficiencies were nearly the same in both JOSIE campaigns. A comparison of the CMDL results at JOSIE in 1996 and 2000 showed that the unbuffered 2% KI sensor solution improved the stratospheric measurements, averaging about 6% greater than the UV-reference compared with 15% greater with the 1% KI. The agreement was not as good near the surface where the 2% KI ozonesondes were about 8% too low. However, several calibrations in CMDL (in the laboratory and outside) comparing ozonesonde measurements to measurements made with surface instruments with UV techniques were consistently within ±2%.

Figure 4.13 shows one of the JOSIE-2000 simulations with both a model 2Z EN-SCI and Science Pump 6A ozonesonde. The profile simulation, run in a sinusoidal wave pattern, illustrates the general difference observed between the two manufacturers of ECC ozonesondes. On average, the 6A model was about 4% lower than the 2Z model near the surface and nearly 10% lower near the top of the profile. The UV-reference was approximately in between both ozonesonde profiles.

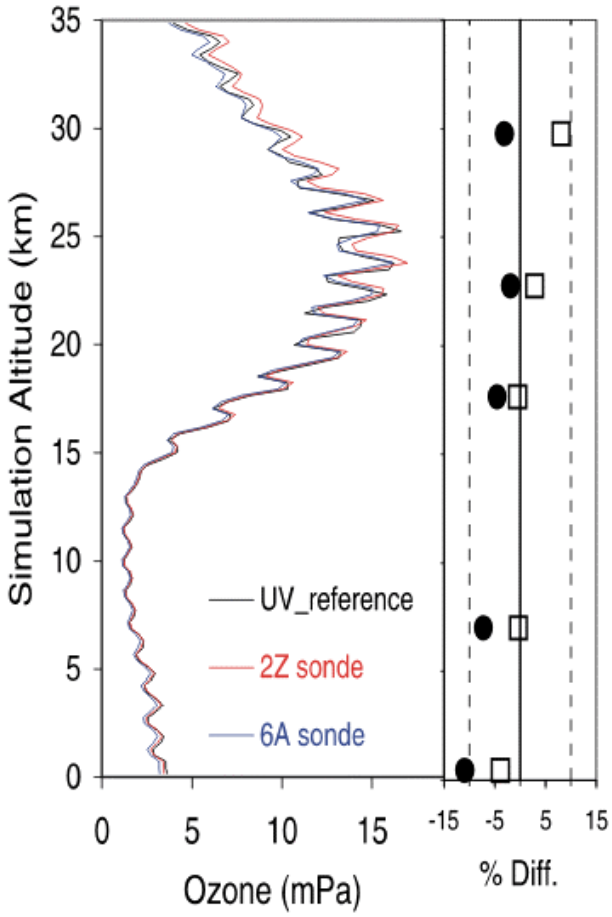

Fig. 4.13. Comparison of models 6A and 2Z ECC ozonesondes during JOSIE-2000 simulation experiments. Both ozonesondes used unbuffered 2% KI cathode-sensing solution. The chart on the right shows the percent differences (UV minus sonde) between the UV-reference and both the 6A ozonesonde (black circles) and the 2Z ozonesonde (squares).